Daily Diary Report by Bid Item

Contract No.: 04-0120F4
Diary #: 537 **Const Calendar Day:** 110 **Date:** 22-Sep-2012 **Saturday**
Inspector Name: Brignano, Bob **Title:** Transportation Engineer
Inspection Type:
Shift Hours: **Break:** **Over Time:**
Federal ID:
Location:
Reviewer: Schmitt, Alex **Approved Date:** **Status:** Submit

04-0120F4
04-SF-80-13.2/13.9
Self-Anchored
Suspension Bridge

Weather

Temperature **7 AM** **12 PM** **4PM**
Precipitation **Condition** clear

Working Day ☑ If no, explain:

Diary: Dispute ☐

General Comments

HINGE K, WB, DIAPHRAGM CONCRETE, BEARINGS, RESTRAINT BRACKET REMOVAL;
CCO 153 FURNISHED RESTRAINT BRACKETS; CCO 216 ABF INSTEAD OF MCM CONCRETE POUR AND ASSOCIATED WORK:

The short summary of today's work is as follows:

Conco stripped formwork areas under HPS's.
Conco applied clear cure compound to the concrete where the forms were stripped.
Conco and ABF removed Styrofoam where necessary to remove bearing temp brackets.
ABF removed the bearing temp brackets.
ABF bolted (snug + 1/8 turn) where the bearing temp brackets were located.
I moved the concrete cylinders from the field to the water bath at the Pier 7 warehouse (20 +/- 4 hours after casting, as required by CTM).

The diaphragm concrete was poured last night (inspected by others). There was some sort of mix up that resulted in Conco arriving at 12noon instead of 10am, so ABF brought over an ironworker crew early to help Conco with the Styrofoam removal so that the temp brackets could get removed by the end of the shift. ABF and Conco finished work about 3:15pm, but the shift end is later when they are able to get offsite.

The following is a detailed description of the work:

Around 1130, ABF laborer foreman Jose Avila started work removing bracing between the Hinge K formwork and the Hinge K HPB base on the other side of the joint. Jose Avila only worked at this location for about an hour before leaving the remainder of the work for Conco. Four carpenters from Conco arrived at 1200. They began work at the east face of the diaphragm forms where they removed the formwork panels under the HPB's so that ABF could access the restraints at the bearings. The concrete pour had ended last night and by the time the formwork was removed today in the afternoon, the concrete had set - early age removal of the formwork presented no issues.

Because of Conco's late start, the planned 8 hour ABF ironworker shift until 1500 in the field (1530 off site), and the need to get the bearing restraint brackets removed by the end of the shift to prevent any thermal movement restraints, an ABF ironworker crew arrives at Hinge K after 1300 to assist with the work. ABF ironworkers Jim Benninghove, Ryan Evanchik, Joe Byrnes, Tony Miranda, and Jonathan Canites work at Hinge K at the end of the day from 1300 to 1530. Tool Room laborer Danny Schwartz is also assisting part time in the afternoon by running different tools from the Tool Room on the OBG near

the tower to the Hinge K work area. ABF General Superintendent Jerry Kent is present at the start of the work and ABF General Foreman Aaron Kent is present at the end of the work. ABF Engineer Dan McNichol is present at Hinge K from 1200 to 1530.

Removing the Styrofoam that formed the oval between the diaphragm and the HPB took some time to complete. Coco tried using a skill saw to make some big initial cuts, and ended up using a saws-all and pry bars to remove the Styrofoam in small pieces. When ABF ironworkers arrived they used a saws-all and sleever bars to remove Styrofoam at locations where Conco was not working. The Styrofoam comes out in small pieces that fill several trash bags.

At 1345, Conco had removed enough Styrofoam at the north HPB on the east face of the diaphragm for ABF ironworkers to begin removal of the bearing temporary restraint bracket. Some of the ABF ironworkers began removal of that bracket, while other ABF ironworkers continued Styrofoam removal at the south HPB on the east face of the diaphragm. Conco moved to the west face of the diaphragm to remove forms under the north and south HPB's.

ABF ironworker operations at the bearings includes, unbolting the restraint bracket where it is attached to the stainless steel housing at 2 bracket feet with 4 bolts at each foot (note: Allan-wrench head), unbolting the restraint bracket where it is attached to the bronze ring at 3 points (note: Allan-wrench head), removing the restraint bracket from the bearing/diaphragm, and adding new 5/8" hex head bolts where temporary bolts were removed at the restraint bracket to the stainless steel housing connections. New 5/8" Geomet coated bolts and washers were put into all the holes where the temporary bracket bolts were removed. These bolts are required to be turned to snug + 1/8 turn (45 degrees). ABF snug tightened the bolts and turned them to the required turn amount based on match marks. The end product ended up closer to snug + 1/6 turn (60 degrees), but that is an acceptable tolerance. The ironworkers used a small (to fit in the less than 1' head room under the HPB) air impact gun to tighten the bolts with the required turns marked on the socket.

At 1420, ABF ironworkers are done at the two brackets to the east face of the diaphragm at the north and south HPB's. At this time, Conco has removed all the forms under the HPB's to the west of the diaphragm, and Conco is working on Styrofoam removal at the south location while ABF works on Styrofoam removal at the north location.

At 1440, ABF ironworkers start removing the 3rd restraint bracket for the day, at the west face of the diaphragm at the north HPB. Then they add the permanent bolts. At the south HPB at the west face of the diaphragm, ABF ironworkers begin work removing Styrofoam when they are done at the north HPB and before Conco finished work at this location. With ABF working on the Styrofoam removal at the last location, Conco then goes to add clear cure compound to the 2 locations of stripped formwork at the east face of the diaphragm (they had added clear cure compound at the 2 locations of stripped formwork at the west face of the diaphragm earlier).

At 1515, ABF is done with bracket removal and adding permanent bolts at the 4th restraint bracket location for the day, at the west face of the diaphragm at the south HPB. Conco is also all done about 1515 and then leaves the jobsite - they worked 4 hours of 1.5X OT in the field today.

ABF normally stops working at 1500 to leave the site and be back at Pier 7 or at the base of W2 by 1530 end of an 8 hour shift. The work on the Hinge K bearings went a little late and ABF ironworkers may have worked an 8.5 hour day as a result, with 8 hours at 1.5X OT and 0.5 hours at 2X OT. However, the ironworkers who take the long boat back to Pier 7 left first and the ironworkers who take the short elevator ride to the base of W2 did the later work, so it is possible that all the ironworkers only worked an 8 hour shift if they were able to get offsite in time. Also, unless the ironworkers staggered their afternoon break among the different ironworkers in the crew (rather than the normal practice of the entire crew taking the break at the same time), it appears that the ironworkers did not take their scheduled afternoon break and would be owed 0.5 hours of 2X OT as a result.

The following are some issues that came up during the work today:

The only bad spot of concrete in the area where the forms were stripped that requires repair (patch or pourback) is under the north HPB at the surface towards the west. There were 2 other spots (north and south HPB's, surfaces towards the east) where the concrete was slightly low under the hardboard, but those spots are very small. Only the Styrofoam was removed, so there may be more problems visible when the hardboard is removed.

ABF Engineer Dan McNichol had stainless steel cap screws and thread locking compound that he planned to use to plug the holes where the bolts were removed in the bearing ring. We discussed it and decided not to do that work and that maybe it didn't need to be done at all. The oval spherical housing is stainless steel, but the round ring is bronze, so stainless steel bolts may not be right for installation in the holes in the ring. There are 3 holes in each side of the ring that were used for attaching the bottom restraint bracket, but there are also 3 other holes at the top and sides that were used by Lubrite for handling purposes and were not plugged at the shop. Large hex heads sticking out from the ring would be close to the stainless steel housing and could result in a conflict during movement and rotation.

There was a small water puddle in the stainless steel housing concave surface at both bearings. There were also streaks coming down from the top in that concave bearing surface. The material in the bearing was mostly water, but there was some cement paste mixed with the water. Outside the concave bearing surface at the bolts connecting the stainless steel housing to the segmented anchor ring plates, there were also streaks. It appears that there was leakage at the bolts. Those bolts were tightened, but because they are in drill and tap holes, they were only tightened to snug + 1/8 turn, so it is reasonable for water to leak through the interface between the bolt and the threaded hole. Note that the original Lubrite plan was to use "temporary bolts coated with an industrial grease", but CT decided (State Letter 05.03.01-009858) that the permanent bolts would be more consistently tightening if this work was done in the shop because of how close the bearing is to the HPB at the top and sides.

New 5/8" Geomet coated bolts and washers were put into all the holes where the temporary bracket bolts were removed. These bolts are required to be turned to snug + 1/8 turn (45 degrees). ABF snug tightened the bolts and turned them to the required turn amount based on match marks. The end product ended up closer to snug + 1/6 turn (60 degrees), but that is an acceptable tolerance. We provided no tolerance in State Letter 05.03.01-009858, but +15 degrees is reasonable based on RCSC tolerances for typical turn amounts (+/- 30 degrees for turn amounts less than or equal to 1/2 turn, or +/- 45 degrees for turn amounts greater than 1/2 turn). The turn amount of snug + 1/8 turn was selected to be more than snug tight so that the bolts will not come loose and to not be so much that there would be any danger of stripping the drill and tap holes.

Conco and ABF removed the minimum amount of Styrofoam necessary to get to the restraint brackets. Besides removing more formwork and Styrofoam, there will also be some necessary cleanup at the bearings and HPB's. At the end of Saturday's work, ABF/Conco did not cleanup this area because more work is still necessary in the area. The HPB's just outside of the bearings have a lubricant that was applied under the Styrofoam to prevent it from getting stuck during thermal cycles, but that lubricant now has lots of debris stuck on it.

While Conco's carpenters did some of the Styrofoam removal, ABF's ironworkers did other portions of the Styrofoam removal. At the first location where ABF's ironworkers worked on Styrofoam removal, they used brake cleaner to soften the Styrofoam. I told them to not spray the brake cleaner into the holes in the Styrofoam towards the bearing, because I don't know how that could affect the Lubrite G10 lubricant. Later, ABF Engineer Dan McNichol expressed the same concern, and because ABF's ironworkers did not use brake cleaner at the later locations, he may have told the ironworkers not to use brake cleaner at all.

ABF Engineer Dan McNichol saved the 4 brackets from the bearings and said that they would be sent to Lubrite for use in the next 2 bearings. The assembly of the next 2 bearings is scheduled for next month.

INSPECTOR OT REMARK:

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8 hour OT in the field: At Hinge K, Conco removes a portion of the forms under the hinge pipe beam, ABF removes the bearing temporary support bracket, and ABF adds bolts where temp bolts were used for the brackets. I am in the field at 0930 for the work scheduled to start at 1000, but work does not really start until 1200 when Conco arrives later than planned. Work in the field ends at 1515, but then I move concrete cylinders from last night's pour from the field to the water bath in the Pier 7 warehouse until approximately 1700.